

**METHOD OF MAKING A TUNNEL JUNCTION SENSOR WITH
A SMOOTH INTERFACE BETWEEN A PINNED OR
FREE LAYER AND A BARRIER LAYER**

5 **ABSTRACT OF THE DISCLOSURE**

 A method of making provides a smooth surface of a pinned or free layer
interfacing a barrier layer in a tunnel junction sensor wherein the smooth surface is an
oxidized monolayer of the pinned or free layer. After sputter depositing the pinned or
free layer the layer is subjected to an oxygen (O_2) atmosphere which is extremely low
10 for a very short duration. In a preferred embodiment of the invention a partial
thickness of the barrier layer is provided with a smooth surface by the same process
after which a remainder thickness of the barrier layer is deposited and the barrier
layer is exposed to oxygen (O_2) to form an oxide of the deposited metal.

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